Hunting bats rely on 'bag of chips effect'

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Rhinopoma microphyllum bats rely on the sounds of their peers when searching for a good meal. Credit: Jens Rydell

When bats hunt in groups at night, they rely on the sounds of their fellow bats to tip them off on the best places to a grab a good meal. Researchers reporting their findings in the Cell Press journal *Current Biology* on January 8 are calling this behavior the "bag of chips effect."

"When you sit in a dark cinema theater and someone opens a bag of chips, everyone in the theater knows that someone is eating chips and

approximately where that someone is," says Yossi Yovel of Tel Aviv University. "Bats work similarly."

When one bat finds a patch of insects, all of the other bats within earshot will realize this, he says. That's very useful information because a bat can use its sonar to detect an insect only when it is nearby—within 10 meters—but a bat can hear that another bat has detected an insect from 100 meters away.

The collective searching of the socially insectivorous *Rhinopoma microphyllum* bats under study is probably especially useful considering that they were mainly preying on flying ant queens. Although the ant queens can be abundant, they also tend to be concentrated in sparsely distributed and hard-to-find patches, forcing bats to fly long distances in order to track them down. By eavesdropping on each other, the bats' chances of landing a meal are improved.

Yovel and his colleagues realized the bats presented a unique opportunity to study social foraging because of their constant use of sonar to find their way in the dark. The researchers fitted bats with tiny GPS-tracking, ultrasonic recorders and then let the bats go do their usual thing.

"This allowed us to tap into the bats' sensory acquisition of the world by recording them," Yovel says. "I can look at their sonar recordings and infer when the bats are attacking prey or where they are interacting with another bat. This is almost impossible to do with other animals."

Retrieving the data on those recorders was no easy feat, however. The recording devices fell from the animals in about a week's time, but the researchers then had to search for and find the devices wherever they happened to land. In the end, they only got 40% of the recorders back.

That was enough to capture more than 1,100 interactions between tagged

bats and their peers. The data suggest that bats intentionally aggregate to improve their chances in finding prey.

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In essence, the researchers explain, the bats are improving their success rate by acting not as individuals but as an "array of sensors." However, there are limits: it's best for the bats to keep the crowd to an intermediate size, to ensure efficient prey detection without other bats getting in their way.

More information: *Current Biology*, Cvikel et al.: "Bats aggregate to improve prey search but might be impaired when their density becomes too high" www.cell.com/current-biology/a … 0960-9822(14)01437-7

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